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XXXIII. *An Account of an Earthquake in Siberia: In a Letter from Mons. Weymarn to Dr. Mounsey, Principal Physician of the Emperor of Russia, F. R. S. Translated from the French. Communicated by Mr. Henry Baker, F. R. S.*

Read June 16,
1763.

I Cannot express the excess of joy and compleat satisfaction, with which I heard, by our friend Dr. Erasmus, and the Reverend Mr. Minau, and soon after by the Petersburg Gazette, the pleasing and long expected news, that his Imperial Majesty, our most gracious Sovereign and Master, has been pleased to confer on your Excellency the Office of Archiater, and Supreme Head of the Medical Faculty, throughout the whole Empire, with the rank and dignity of a Privy Counsellor.

As I suppose your Excellency has received my last letter, as also the skin of a monstrous lamb; and not doubting but you will be glad to collect other curiosities of this country, I shall not fail to send you, by the first opportunity, several pieces, with proper remarks, on different subjects relating to the natural history and geography of these regions. In the mean time, I have the honour to send you inclosed, an account of an earthquake we felt, on our frontier lines, in the month of November last year; and, tho' these accidents are no uncommon thing here, yet I think it deserves our attention, considering the circumstances it has been attended with, which has

induced me to subjoin my own reflexions, which I take the liberty to submit to your Excellency's judgment, and humbly beg your opinion of them, if your important avocations will allow you time.

It is a great concern to me, that the immense labours of my very burdensome and fatiguing post will not allow me to follow my inclination for the study of nature, and for curious and useful enquiries into the physical sciences, which would enable me to satisfy the desire I know your Excellency has to acquire a particular knowledge of the properties and produce of this country, which well deserve the attention of the learned, and would require an abler hand and more leisure than I am master of.

The more I examine this country, the more I find it worthy of the closest attention. The air and most of the waters are excellent, the soil is fruitful, and produces all that can be imagined. With a little more application and industry, and if the inhabitants would divest themselves of their old prejudices, it might easily be made a most delightful and wealthy country.

Your Excellency's time is too well employed to be wasted in reading voluminous epistles, wherefore I shall put an end to this letter, that has already taken up too many of your moments; but cannot conclude without renewing the protestations of the sincere and inviolable respect and attachment, with which I have the honour to subscribe myself,

Sir, Your Excellency's

From Fort Omsk,
March 26th,
1762.

Most obedient humble Servant,

W. W. Weymarn.

The

THE weekly papers are filled with all the remarkable events, which happen in all the known and inhabited parts of our globe, altho' they are neither extraordinary nor uncommon, either with regard to the productions and effects of nature, or the places where they happen. These laudable endeavours to impart whatever may be unknown, or but little known as yet, to the generality of the world, are useful helps towards getting an insight into the various works of nature, and the promoting of arts and science in general, as they put ingenious and learned men, and lovers of sciences, upon searching into the causes and effects of natural events: in order to improve such as may prove beneficial to mankind, and likewise to find out the means of preventing or removing such as may be hurtful: And should those communications be productive of neither of these advantages, they would at least serve to make us more acquainted with the countries and places where those things happen. Hitherto it does not appear that any thing of this kind has been published relating to Siberia, a vast and rich tract, abounding in all kinds of natural productions, and well worthy the notice of the learned and curious. But this scarcity of news from Siberia seems to be rather owing to the inattention of the inhabitants than the neglect of the news writers. The times of indolence and inattention seem however to be now at an end even in Siberia, from whence we have the following account of an Earthquake, which was felt there on the 28th of November last (old stile) in the evening, towards the frontier lines on the side of Zengoria. The shocks were felt

at the same instant to the extent of above a thousand versts *. The inaccuracy of this account, and the omission of minute circumstances, must be imputed to these people's being unaccustomed to make or describe any observations. However we shall relate it such as it is.

From Fortin Nowikowski, the last but one on the line of Kusnetsk, to the Eastward, Oct. 24, 1761.

The day before yesterday, Oct. 22d, at one in the afternoon, a noise was heard under ground, which, tho' of a short duration, was pretty distinctly observed by the whole garrison, and particularly by those whose houses stand without the walls of the Fort. This subterranean noise, whilst it lasted, was attended with a trembling of the earth, which only shook the timber-houses. The next day, at four in the morning, it lightened as in summer, but this did not last long.

Fort of the Mines of Koliwan, situated on the Line of the same name, adjoining to that of Kusnetsk, Nov. 30, 1761.

The 28th instant, between 7 and 8 in the evening, we felt an Earthquake, which begun by a subterranean noise. Its course was from East to West. The shocks were not so violent as to do any damage,

* N. B. A Russian Verst is $1166\frac{2}{3}$ English yards.

and but slightly shook the houses. This Earthquake lasted but three minutes. On the same day, at the same hour, and with the same circumstances, this Earthquake was felt at Fort Czagirsk, and at the Redoubt of Inesk, both on the Line of Koliwan, but with this difference, that not only the houses, but also the bastions, and even the timber tower at Czagirsk, were shaken, but no damage ensued.

Fort Ust Kamenogorski, situated at the Southern extremity of the Line of Irtysh, and on the Eastern bank of that river. Nov. 30. 1761.

The day before yesterday, between 7 and 8 in the evening, was heard a subterranean roaring noise, like that of a very violent storm: and soon after were felt such violent shocks of an Earthquake, for the space of about 20 minutes, that several wooden houses were removed from their places: and the green turfs, that the roofs are covered with, were cracked and dropped off. Water, that stood in pails and other wooden vessels, was spilt on the ground. The rumbling noise was distinctly observed to come from the East, and to extend toward the North. The same thing was likewise observed in all the fortines and redoubts dependent on Fort Ust Kamenogorski, situated lower down the banks of the Irtysh.

From

From Fortin Schoulbinsk, situated on the banks of the Irtysh, 125 versts from Ust Kamenogorski, Nov. 30. 1761.

It was the day before yesterday, between 7 and 8 in the evening, that, without hearing any noise under ground, we felt the Earthquake here, which lasted but about two or three minutes, and did no other mischief than shaking the houses a little. Its direction seemed to be from South to North.

Fort Sempalat, near the Irtysh, 206 versts from Ust Kamenogorski, Dec. 1. 1761.

On Wednesday last, Nov. 28, some officers having met at my house to spend the evening, between 7 and 8 we felt the bench on which we were sitting shake several times pretty violently; and, thinking at first that some of the company did it in sport, we began to chide one another; but, being at length convinced that the motion proceeded from an Earthquake that shook the whole house, and made the beams and doors crack, every one hastened to the door, to escape the danger they apprehended from the falling of the house. We were scarce got out, but we heard the centry, who was upon duty on the top of the timber tower, call out, that the whole tower was shaking, as well as all the other works of the fortification. However, we were soon delivered from
our

our fears, the Earthquake having lasted but about 12 minutes, without doing any other damage than throwing down and breaking some earthen ware here and there. Upon my return home, I found my books tumbled off the shelf and lying on the ground, as did likewise my ink-bottle that stood upon the table. As the shaking of the houses was observed to be from East to West, it is to be conjectured that the direction of the Earthquake, or rather the kindling of the subterranean combustible matter, was from South to North, as some pretend to have expressly observed. Just as the post is going out, we have an account that this Earthquake was felt at Fortin Glouchowskoi, as also at the Redoubt of Pjanojarsk, with the same circumstances, and at the same time, as here.

Fort Jamscheff, on the banks of the Irtysh, 460
versts from Ust Kamenogorski, Dec. 3. 1761.

The Post from Sempolat, and other places higher up the Irtysh, as likewise that which is come in at the same time from the Line of Koliwan, having brought us an account of a violent Earthquake that was felt on the 28th of last month, not only on the line of Irtysh from Ust Kamenogorski, but likewise on those of Kufnets'k and Koliwan, we must credit the observations made here, by numbers of people, of an Earthquake on the 28th of November between 7 and 8 in the Evening, which, tho' it lasted near 12 minutes, was so slight as not to occasion the least damage, but only a gentle motion hardly to be felt.

Extract

Extract of a Letter from the Foundry at Bar-naoul, Feb. 9. 1762.

I here fend you an account of the Earthquake, which was felt here on the 28th of November last year. At above half an hour after 7 that evening, the air being dense, calm and quite still, an undulating motion was felt, like that of large and high waves, which continued for some minutes, and was immediately succeeded by the Earthquake, with such violent shocks, that the beds, chairs, tables, and other household goods, were removed from their places and thrown about the rooms. The shaking of the houses was very strong. Its direction was from South-West to North-East. Some persons passing, at that instant, over the great dyke, before which are the melting furnaces, have reported that they heard a loud noise, like that of the great hammers when they are all employed in the works.

I beg leave to add, to these several accounts, some reflexions, relating to the origin, progress, and effects of this common and well known phenomenon, which all parts of the world are liable to.

1. The ridge of mountains, called Altaiskoi Chrebet, or Chain of Altai, from Lake Teletskoi to the Eastern bank of the Irtysh, covers all that part of the frontiers of Siberia towards the South, which lies between the said Lake and the river Irtysh, and extends from East to West, and

so goes on beyond the Irtysh, in the same direction, thro' the country of Zengoria.

2. These mountains abound with all sorts of minerals; particularly that part which borders on the river Dgelo, which runs from the West into the river Katunja, is all full of a kind of Saltpetre, which is found in form of a cement, in great plenty, in the clefts and between the beds of rock; with this the Tartars and Kalmucks make very strong and good Gunpowder, by an industrious, simple and expeditious method.

3. This place is situated almost Eastward of Fort Ust Kamenogorski, from whence they seem to have given the most exact account of the Earthquake. The inhabitants, being accustomed to these events, which happen there almost every year, must be better able to trace its origin, progress, and effects than those of other places.

4. If the combustible matter took fire at first in the places mentioned in the second article, and if it may be conjectured that in this ridge of mountains, infinitely more combustible matter may be contained than in the flat country, without any interruption; the direction of the Earthquake must undoubtedly have followed the course of the ridge of mountains, that is to say, from East to West, till it was interrupted by invincible obstacles.

5. According to advices just received from the Kirgis Kaisacks, who inhabit the parts beyond the Irtysh, they have had no Earthquake, neither on the 28th of November, nor for a long while before or after; and, as it came in a direct line from the East

to Ust Kamenogorski, and did not pursue its first direction from East to West, but turned off to the North, as appears from the accounts from the Forts Schoulbinsk and Semipalatnaja and others, its course must have been interrupted in its way, by some unsurmountable obstacle, towards Ust Kamenogorski. This obstacle seems to have been no other than the river Irtysh, which runs from South to North, whence it follows too, that the inflamed matter did not lie so deep as the bottom of the river, as it would otherwise have followed the direction of the ridge of mountains that extends towards the West.

6. The account from Barnaoul seems to confirm this opinion, and shews that the deviation of the Earthquake happened near Fort Ust Kamenogorski, which lies directly to the South West of Barnaoul.